



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/542,075

01/23/2006

Jurgen Weichart

38477

9693

116 7590 09/15/2009

PEARNE & GORDON LLP
1801 EAST 9TH STREET
SUITE 1200
CLEVELAND, OH 44114-3108

EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

09/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,075	Applicant(s) WEICHART, JURGEN	
	Examiner Ram N. Kackar	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-11,13,15,16 and 19-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11,13,15,16 and 19-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/10/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made

2. **Claims 1, 3-5, 7-9, 11, 13, 15, 20-21, 23, 28-30 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokisue et al (US 5258047).**

Tokisue et al disclose a carrier (2 also called hand body sometimes) which is adapted to be transported as shown in Fig 1, 3 and 4 and adapted to be chucked on a pedestal like shown in Fig 30. There are several embodiments of the carrier (hand body) and its attachment to the pedestal. For example in Fig 29 it is chucked mechanically and in Fig 20 it is chucked electrostatically on a grounded bed 16. Bed 16 in another embodiment (Fig 46) could have bipolar regions for making it a bipolar chuck.

Tokisue et al discloses frame with a clamped-in carrier (Fig 20 combination of dielectric 71 and conductor 20), where a substrate is secured over substantially its entire surface to the carrier. The substrate is clamped electrostatically on the carrier through another dielectric layer.

This carrier is further configured to be removably positioned adjacent a surface of a chuck electrode (Fig 20 16) so that said carrier and said chuck electrode together form an electrostatic chuck device wherein the conductive layer of said carrier (20) and surface of said

Art Unit: 1792

chuck electrode (16) form two plates of a plate-type capacitor when positioned adjacently (See for example Col 8 line 14-43). Dielectric layer could comprise alumina as conventionally known.

It is noted that the applicant has used the terms like “frame” and “clamp” in a special way different from the way they are used commonly. It is noted that MPEP allows applicants to be their own lexicographer as long as they define the special terms with clarity, precision and deliberateness.

Accordingly the term “frame” is used as an electrical connector according to its function to provide a conductive path to a layer of a carrier plate and the term “clamp” is interpreted as the function of providing conductive path to the carrier plate.

Frame and clamping are therefore indirectly disclosed as the electrical connection to conductive layers is disclosed.

Regarding claim 4, it is a product by process claim. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps.

The dimensions of layers as claimed in claim 5 are obvious to be optimized for chucking force and mechanical strength.

3. Claims 6, 10, 19, 22 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokisue et al (US 5258047) in view of Herchen (US 5737178).

Tokisue et al disclose all the limitations of these claims except commonly known elements of chucks used for semiconductor processing in a vacuum chamber as disclosed by Herchen.

Herchen discloses a vacuum chamber with an electrostatic chuck and RF power electrode where chuck electrode is insulated from RF power electrode and there is heat transfer gas between the substrate and chuck (Fig 1-3).

Since these elements are required for plasma processing it would be obvious for one of ordinary skill in the art at the time of invention to chuck the carrier of Tokisue et al on the base as in Herchen.

4. Claims 1, 11, 15-16, 20 and 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokisue et al (US 5258047) in view of De et al (US 6491083) or Arita et al (US 2003/0037882) or Testuro Toya (US 6692221) or Kumar et al (US 6642127) or Jones (US 6497784).

Tokisue et al as disclosed above do not disclose using adhesive for holding the substrate on the carrier.

Adhesive is known for holding substrates or disk type devices like chuck as an alternative to electrostatic chuck or vacuum chuck.

Arita et al disclose a film carrier 6a for holding and transporting a supporting 6. The carrier is configured to attach an electrode (3) so that it is electrostatically attached to it (See for example Fig 2 and 3b. The electrode provides one conductive layer while electrode 4 provides second conductive layer. The two conductors 3 and 4 form two plates of a capacitor to hold the carrier through the conductive plasma as disclosed in Fig 3b and Para 28.

Arita et al disclose using adhesive to hold the substrate to the carrier.

Arita et al do not disclose a separate conductor plate attached to carrier to enable it to attach the carrier to chuck electrode without the conductivity of the plasma and a frame to connect voltage or ground to it.

However Tokisue et al disclose both these elements.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have a conductive layer to the carrier and a frame to connect voltage/ground to it in order to hold the carrier to the chuck electrode electrostatically in order to be able to do that without plasma.

Similarly Testsuro Toya discloses at (Col 1 lines 36-42), Kumar et al at (Abstract), De et al at (Fig 1) and Jones at (US 6497784) also disclose use of adhesive to attach substrate to carrier plate.

Therefore it would have been obvious for one of ordinary skill in the art to have used adhesive to attach substrate to carrier plate as an equivalent way which is also known for thermal conductivity.

Regarding claims 35-36 Arita discloses chucking carrier for process and later removing.

5. Claims 35-36 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Tokisue et al (US 5258047) in view of Arita et al (US 2003/0037882) and further in view of Tanabe et al (JP 03003250).

Tokisue et al in view of Arita et al is disclosed above.

Tanabe et al disclose a carrier which holds a semiconductor while the carrier is held by electrostatic chucking force (See abstract and Fig 1). The substrate through the carrier is

Art Unit: 1792

transferred to the chamber and clamped electrostatically for processing and then brought out by removing voltage.

Therefore it would be obvious to do the same for the carrier of Tokisue et al or Arita et al by appropriately switching voltage for chucking and dechucking.

Response to Arguments

Applicant's arguments filed 6/25/2009 have been fully considered but they are not persuasive.

Applicant argues that in Tokisue and particularly in Figs. 19 and 20, there is no separate carrier to which the substrate is secured and frame in which the carrier is clamped, distinct from the conductive ceramic 20 that supplies the opposite pole of the capacitive circuit to attract the wafer 1' thereto for transport when energized.

In response it is noted that according to Figs 20, 45, 46 and 48-50, a carrier is attached to a bed 16 by electrostatic means by connecting ground to bed 16 or as in Fig 46 by providing embedded conductors for a bipolar electrostatic chuck. If the power is turned off and static charges removed the carrier separates. Therefore removal carrier is disclosed. Further according to independent claims the substrate is held to the carrier. Adhesive is used in dependent claims only. Therefore holding substrate also with electrostatic force to hold it reads on the independent claims.

Applicant argues the advantages of having substrate attached to a carrier which only undergoes repeated electrostatic attraction and removal.

In response it is noted that this issue is not commensurate with the scope of the claims.

Applicant argues that adhesive is not equivalent to electrostatic retention.

In response it is noted that the rejection does not allege that they are equivalent.

The response to applicant's argument about the interpretation of the terms "frame" and "clamped in" is presented above.

In response to applicant's argument regarding bed 16, it is noted that bed 16 is not part of the hand body. 20 and 71 are part of the hand body which can be removably attached to the bed 16.

The applicant argues that in particular, in the Arita reference cited by the Examiner, the substrate/tape 6/6a combination is not held via electrostatic attraction. Instead, a suction is applied via adsorption holes 3e to retain the substrate/tape 6/6a to the lower electrode 3 surface during plasma processing. No potential is applied to the substrate 6 or the tape 6a. Electrode 3 does not provide electrostatic attraction to the substrate 6 as the Examiner suggests.

In response the applicant is requested to look at Fig 3b and the description at para 28.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 1792

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ram N Kackar/
Primary Examiner, Art Unit 1792

Application/Control Number: 10/542,075
Art Unit: 1792

Page 9